

## CLAIMS

We claim:

- 1           1.       (Currently amended) A polymer electrolyte comprising:  
2                   a modified ~~polymeric material, said modified polymeric material including a~~  
3 halogen containing polymer having an enhanced halogen level ~~, said enhanced halogen level~~  
4 relative to a halogen content of an unmodified ~~said~~ halogen containing polymer formed from  
5 polymerization of its monomer;  
6                   a salt of an alkali metal; and  
7                   an aprotic solvent, wherein said salt and said aprotic solvent are integrated with  
8 said modified polymeric material as a homogeneous material.
  
- 1           2.       (Currently amended) The polymer electrolyte of claim 1, wherein said unmodified  
2 halogen containing polymer includes at least one chlorine containing polymer.
  
- 1           3.       (Original) The polymer electrolyte of claim 2, wherein said chlorine containing  
2 polymer is polyvinylchloride (PVC).
  
- 1           4.       (Currently amended) The polymer electrolyte of claim ~~[[3]]~~ 1, wherein ~~said~~  
2 ~~polyvinylchloride (PVC) is suspension polyvinylchloride (PVC)~~ a lithium ion conductivity of  
3 said polymer electrolyte at 25 C is between 0.01 S/cm<sup>2</sup> and .108 S/cm<sup>2</sup>.

1           5.       (Currently amended) The polymer electrolyte of claim [[3]] 1, wherein said  
2 ~~polyvinylchloride (PVC) is emulsion polyvinylchloride (PVC)~~ a lithium ion conductivity of said  
3 polymer electrolyte at 25 C is between 0.066 S/cm<sup>2</sup> and .108 S/cm<sup>2</sup>.

1           6.       (Original) The polymer electrolyte of claim 1, wherein said modified polymeric  
2 material comprises C-PVC, said C-PVC having 60-72 wt % chlorine.

1           7.       (Original) The polymer electrolyte of claim 6, wherein said polymer electrolyte  
2 comprises 10-40 wt % of said C-PVC.

1           8.       (Original) The polymer electrolyte of claim 1, wherein said alkali metal salt is at  
2 least one selected from the group consisting of LiClO<sub>4</sub>, LiBF<sub>4</sub>, LiAsF<sub>6</sub>, LiPF<sub>6</sub>, LiCF<sub>3</sub>SO<sub>3</sub> and  
3 LiN(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>.

1           9.       (Original) The polymer electrolyte of claim 1, wherein said electrolyte comprises  
2 from 3-20 wt % of said salt of an alkali metal.

1           10.      (Original) The polymer electrolyte of claim 1, wherein as said aprotic solvent is at  
2 least one selected from the group consisting of propylene carbonate, ethylene carbonate,  
3 dimethyl carbonate, gamma-butyrolactone, 1,3-dioxolane and dimethoxyethane.

1           11.     (Original) The polymer electrolyte of claim 1, wherein said electrolyte comprises  
2     40-82 wt % of said aprotic solvent.

1           12.     (Currently amended) A rechargeable battery, comprising:  
2                 an anode containing an alkali metal;  
3                 a cathode; and  
4                 a polymer electrolyte formed from a modified ~~polymeric material, said modified~~  
5 ~~polymeric material including~~ a halogen containing polymer having an enhanced halogen level;  
6 ~~said enhanced halogen level~~ relative to a halogen content of an unmodified ~~said~~ halogen  
7 containing polymer formed from polymerization of its monomer, a salt of an alkali metal and an  
8 aprotic solvent, wherein said salt and said aprotic solvent are integrated with said modified  
9 polymeric material as a homogeneous material.

1           13.     (Currently amended) The rechargeable battery of claim 12, wherein said  
2 unmodified halogen containing polymer comprises at least one chlorine containing polymer.

1           14.     (Original) The rechargeable battery of claim 13, wherein said modified polymeric  
2 material comprises chlorinated polyvinylchloride (C-PVC).

1           15.     (Original) The rechargeable battery of claim 12, wherein in said anode comprises  
2 lithium.

1           16.     (Currently amended) The rechargeable battery of claim 12, wherein ~~said anode~~  
2 ~~comprises a lithium alloy~~ a lithium ion conductivity of said polymer electrolyte at 25 C is  
3 between 0.01 S/cm<sup>2</sup> and .108 S/cm<sup>2</sup>.

1           17.     (Currently amended) The rechargeable battery of claim 16, wherein a lithium ion  
2 conductivity of said polymer electrolyte at 25 C is between 0.066 S/cm<sup>2</sup> and .108 S/cm<sup>2</sup> ~~as said~~  
3 ~~lithium alloy is at least one selected from the group consisting of lithium-aluminum, lithium-~~  
4 ~~aluminum-silicon, lithium-aluminum-cadmium, lithium-aluminum-bismuth and lithium-~~  
5 ~~aluminum-tin.~~

1           18.     (Currently amended) The rechargeable battery of claim 12, wherein said anode  
2 comprises a lithium-ion intercalation material.

1           19.     (Original) The rechargeable battery of claim 12, wherein said cathode comprises a  
2 metal oxide.

1           20.     (Original) The rechargeable battery of claim 12, wherein said cathode comprises a  
2 lithium-transition metal oxide.

1           21.     (Original) The rechargeable cell of claim 12, wherein said cathode is at least one  
2 selected from the group consisting of MnO<sub>2</sub>, LiMn<sub>2</sub>O<sub>4</sub> and vanadium oxides (V<sub>x</sub>O<sub>y</sub>).

1           22.    (Original) The rechargeable cell of claim 12, wherein said cathode comprises a  
2   organic polymer.

1           23.    (Original) The rechargeable cell of claim 12, wherein said cathode is at least one  
2   selected from the group consisting of polyviologen, polyacetylene and polypyrrole.

1           24.    (Original) The rechargeable cell of claim 12, wherein said cathode comprises a  
2   sulfur containing material.

1           25.    (Original) The rechargeable cell of claim 12, wherein said cathode is at least one  
2   selected from the group consisting of  $\text{TiS}_2$ , S, polysulphide and polythiophene.

1           26.    (Cancelled)

1 27. (Cancelled)

1 28. (Cancelled)

1 29. (Cancelled)

1 30. (Cancelled)

1 31. (Cancelled)

1 32. (Cancelled)

1 33. (Cancelled)

1 34. (Cancelled)

35. (Cancelled)

36. (Cancelled)